

AMENDMENT TO THE CLAIMS

The following claim set replaces all prior versions, and listings, of claims in the application:

1 – 13. (Canceled)

14. (Currently Amended) Process for the preparation of a thermoplastic elastomer comprising:

providing a partially vulcanized rubber concentrate (a); and
melt-mixing the partially vulcanized rubber concentrate (a) with a
thermoplastic polymer (b), optionally with additives and/or oil (c),
and a curing agent (d) to initiate a further dynamic vulcanization to
obtain the thermoplastic elastomer, wherein
the partially vulcanized rubber concentrate (a) is prepared by melt-mixing
at least one elastomer and optionally oil (e); at least one
thermoplastic polymer (f); and a curing agent (g), and wherein
the curing agent (d) and the curing agent (g) are each independently
selected from the group consisting of phenolic resins, siloxane
compounds, peroxides, sulfur, sulfurous compounds and mixtures
thereof.

15. (Previously presented) Process according to claim 14, wherein the melt mixing is carried out in a twin-screw extruder.

16. (Previously presented) Process according to claim 14, wherein the melt mixing is carried out in a single screw extruder.

17. (Previously presented) Process according to claim 14, wherein the partially vulcanized rubber concentrate (a) is prepared by melt mixing:

30 to 95 parts by weight of the at least one elastomer (e) and 0-70 parts by weight of oil;

5 to 50 parts by weight of the at least one thermoplastic polymer (f); and
0.1-10 parts by weight of the curing agent (g);

whereby the sum of the parts by weight of the at least one elastomer, the at least one thermoplastic polymer, the curing agent and, if present, the oil is 100.

18. (Previously presented) Process according to claim 14, wherein the elastomer is EPDM or EPM.

19. (Previously presented) Process according to claim 14, wherein the thermoplastic polymer (b) and/or the thermoplastic polymer (f) comprises at least one thermoplastic polymer which is selected from the group consisting of thermoplastic polyolefin homo- and copolymers, reactor TPO, polyamides, polycarbonate, polyesters, polysulfones, polylactones, polyacetals, acrylonitrile-butadiene styrene (ABS) resins, polyphenylene oxide (PPO), polyphenylene sulfide (PPS), styrene-acrylonitrile (SAN) resins, polyimides, styrene maleic anhydride (SMA) and aromatic polyketones.

20. (Previously presented) Process according to claim 19, wherein the thermoplastic polymer (b) and/or the thermoplastic polymer (f) comprises at least one thermoplastic polymer which is selected from the group consisting of thermoplastic polyolefin homopolymer and thermoplastic polyolefin copolymer.

21. (Previously presented) Process according to claim 14, wherein each of the thermoplastic polymers (b) and (f) is a polypropylene homopolymer.

22. (Previously presented) Process according to claim 14, wherein the elastomer in the partially vulcanized rubber concentrate has a gel content higher than 50%.

23. (Previously presented) Process according to claim 14, wherein the elastomer in the partially vulcanized rubber concentrate has a gel content higher than 70%.

24. (Previously presented) Process for the preparation of a thermoplastic elastomer according to claim 14, by melt mixing

- a) 10-90 parts by weight of the partially vulcanized rubber concentrate;
- b) 90-10 parts by weight of the thermoplastic polymer and/or additives;
- c) 0-30 parts by weight of oil; and
- d) 0.1-10 parts by weight of the curing agent

whereby the sum of the parts by weight of the partially vulcanized rubber concentrate, the thermoplastic polymer and/or additives, the oil and the curing agent is 100.

25. (Currently amended) Process according to claim 14, wherein the curing agent (d) ~~and/or~~ and the curing agent (g) ~~comprises at least one curing agent which is~~ are each independently selected from the group consisting of phenol resins, siloxanes, ~~and peroxides, and mixtures thereof.~~

26. (Previously presented) Process for the preparation of a thermoplastic elastomer comprising the steps of:

- (a) performing a first dynamic vulcanization stage to form a partially vulcanized rubber concentrate by melt-mixing a1) an elastomer, a2) a first thermoplastic polymer, and a3) a first curing agent, and thereafter
- (b) performing a second dynamic vulcanization stage to form the thermoplastic elastomer by melt-mixing (b1) the partially vulcanized rubber concentrate formed according to step (a), (b2) a second thermoplastic polymer, and (b3) a second curing agent, wherein

the first curing agent a3) and the second curing agent b3) are each independently selected from the group consisting of phenolic resins, siloxane compounds, peroxides, sulfur, sulfurous compounds and mixtures thereof.

27. (Previously presented) Process according to claim 26, wherein steps (a) and (b) are practiced independently of one another.

28. (Previously presented) Process according to claim 26, wherein steps (a) and (b) are practiced sequentially in the same processing equipment.

29. (Previously presented) Process according to claim 26, wherein first dynamic vulcanization step (a) to form the partially vulcanized rubber concentrate comprises melt-mixing:

- (i) 30 to 95 parts by weight of the at least one elastomer;
 - (ii) 5 to 50 parts by weight of the at least one first thermoplastic polymer;
 - (iii) 0.1-10 parts by weight of the first curing agent; and
 - (iv) optionally oil, wherein
- the sum of the parts by weight of components (i)-(iv) is 100.

30. (Previously presented) Process according to claim 26, wherein the at least one elastomer is EPDM or EPM.

31. (Previously presented) Process according to claim 26, wherein each of the first and second thermoplastic polymers, which may be the same or different, is at least one thermoplastic polymer selected from the group consisting of thermoplastic polyolefin homo- and copolymers, reactor TPO, polyamides, polycarbonate, polyesters, polysulfones, polylactones, polyacetals, acrylonitrile-butadiene styrene (ABS) resins,

polyphenylene oxide (PPO), polyphenylene sulfide (PPS), styrene-acrylonitrile (SAN) resins, polyimides, styrene maleic anhydride (SMA) and aromatic polyketones.

32. (Previously presented) Process according to claim 26, wherein the each of the first and second thermoplastic polymers, which may be the same or different, is a thermoplastic polyolefin homopolymer or a thermoplastic polyolefin copolymer.

33. (Previously presented) Process according to claim 26, wherein each of the first and second thermoplastic polymers is a polypropylene homopolymer.

34. (Previously presented) Process according to claim 26, wherein the elastomer in the partially vulcanized rubber concentrate has a gel content higher than 50%.

35. (Previously presented) Process according to claim 26, wherein the elastomer in the partially vulcanized rubber concentrate has a gel content higher than 70%.

36. (Previously presented) Process for the preparation of a thermoplastic elastomer according to claim 26, wherein the second dynamic vulcanization according to step (b) is practiced by melt mixing:

- (1) 10-90 parts by weight of the partially vulcanized rubber concentrate;
- (2) 90-10 parts by weight of the second thermoplastic polymer;
- (3) 0.1-10 parts by weight of the second curing agent, and
- (4) optionally oil and/or additives, wherein
the sum of the parts by weight of components (1)-(4) is 100.

37. (Previously presented) Process according to claim 26, wherein each of the first and second curing agents, which may be the same or different, is at least one selected from the group consisting of phenol resins, siloxanes and peroxides.

38. (Previously presented) Process according to claim 26, further comprising melt mixing oil when conducting at least one of the first and second dynamic vulcanization according to steps (a) and (b), respectively.

39. (Previously presented) Process according to claim 26, further comprising melt mixing additives when conducting at least one of the first and second dynamic vulcanization according to steps (a) and (b), respectively.

40. (New) Process according to claim 26, wherein the first curing agent a3) and the second curing agent b3) are each independently selected from the group consisting of phenolic resins, siloxanes, peroxides and mixtures thereof.